

### **REMARKS**

Claims in the case are 1-6 and 17-26, upon entry of this amendment. Claims 1-6 and 17 have been amended, Claims 20-26 have been added, and Claims 8-13 have been cancelled herein. The claims have been amended as to form, e.g., by inserting indefinite and definite articles where appropriate, including indentation, replacing "according to" with --of--, and replacing "characterized in that" with --wherein--. Basis for the inclusion of the mean particle diameter of 0.04  $\mu\text{m}$  to 1  $\mu\text{m}$  in Claim 1 is found at page 2, lines 22-24 of the specification. Basis for replacing "less than" with -- $\leq$ -- prior to "100 ppm" in Claim 1 is found at page 2, line 8 of the specification. Additional amendments to the claims will be discussed further herein.

Added Claims 20-25 are based on cancelled Claims 8-13 respectively. The specification has been amended to include section headings. Basis for added Claim 26 is found at page 26, lines 8-16 of the specification.

Claims 1-6, 8-13 and 18-19 stand rejected under 35 U.S.C. §112, second paragraph. This rejection is respectfully traversed with regard to the amendments herein and the following remarks.

Claims 2-6 (which each depend from Claim 1) have been amended to begin with a definite article, as Claim 1 has been amended to begin with an indefinite article.

The condition of Applicants' presently claimed polymer is deemed to be sufficiently definite to one of ordinary skill in the art. Depending on the selection of monomers from which the polymer is prepared, the polymer may be either in a solid form (e.g., in the form of granules or powder in the case of SAN and ABS polymers), or in the form of a latex (e.g., as is possible with ABS polymers), as is known to the skilled artisan.

Claims 8-13 have been cancelled, and replaced with corresponding added Claims 20-25. Claims 20-25 each depend from the now preceding Claim 17. Claims 20-25 contain a singular recitation with regard to "the thermoplastic molding composition." Claim 20 (which corresponds to cancelled Claim 8) recites the molding composition as further comprising a graft polymer, and thus is deemed to

address the Examiner's comments on page 2 of the Office Action regarding insufficient antecedent basis with regard to this term in Claim 17 (from which Claim 20 depends).

In light of the amendments herein and the preceding comments, Applicants' claims are deemed to particularly point out and distinctly claim the subject matter which they regard as their invention. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 1-6, 8-13 and 17-19 stand rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over United States Patent No. 3,969,431 (**Gallagher**) or United States Patent No. 4,336,431 (**McClain**). In light of the amendments herein and the following remarks, this rejection is respectfully traversed.

Gallagher discloses rigid vinyl chloride polymers that are reinforced by admixture with a plurality of elastomer-containing interpolymer particles (abstract). The interpolymer particles of Gallagher are prepared by suspension polymerization of vinyl chloride in the presence of an aqueous emulsion of crosslinked elastomer particles of butylacrylate and 2-ethylhexylacrylate (column 1, lines 41-49). The interpolymer particles of Gallagher are disclosed as having a particle size in the range of 10 to 200 microns. ✓

Gallagher's disclosed particle size range of 10 to 200 microns would be reasonably interpreted by one of ordinary skill in the art as representing an average or mean particle size diameter range. The polymer of Applicants' present Claim 1 has a mean particle size diameter of 0.04  $\mu\text{m}$  to 1  $\mu\text{m}$ . The lower range of Gallagher's disclosed mean particle size is 10 times greater than the upper mean particle size diameter of Applicants' present claims. Further, Gallagher provides no disclosure, teaching or suggestion as to a polymer having both: (i) a mean particle diameter of 0.04  $\mu\text{m}$  to 1  $\mu\text{m}$ ; and (ii) containing  $\leq 100$  ppm of coarse portions having a mean particle diameter of from 200 to 500  $\mu\text{m}$ . ✓

On page 4 of the Office Action, the interpolymers of Gallagher are represented as being prepared by a graft emulsion polymerization process. Applicants respectfully submit that this representation is incorrect. As described

previously herein, Gallagher's interpolymer particles are prepared by suspension polymerization of vinyl chloride in the presence of an aqueous emulsion of crosslinked elastomer particles of butylacrylate and 2-ethylhexylacrylate, and are referred to as suspension-emulsion interpolymer (SEI) particles (column 1, lines 41-49). First, the crosslinked elastomer particles of butylacrylate and 2-ethylhexylacrylate do not have much if any ethylenic unsaturation to which the vinyl chloride monomer can graft on to. Secondly, Gallagher distinguishes her SEI particles from those prepared by graft polymerization, in that the SEI process provides distinct advantages over other methods used to prepare impact modifiers, such as graft emulsion polymerization (column 2, line 63 - column 3, line 9). Gallagher teaches away from particles prepared by the graft polymerization process.

McClain discloses powders of thermoplastic resins (e.g., polyethylene homopolymers or ethylene-vinyl acetate copolymers) having particle sizes in the range of 50 to 500 microns (abstract, and column 19, lines 23-26). McClain's powders are further disclosed as having substantially no particles below 10 microns (column 19, lines 25-26).

The polymer of Applicants' present claims have a mean particle diameter of 0.04  $\mu\text{m}$  to 1  $\mu\text{m}$ . McClain neither discloses nor suggests, and actually teaches away from the particle size range Applicants' polymer. As described above, the powders of McClain are disclosed as having substantially no particles below 10 microns. Further, McClain provides no disclosure, suggestion or teaching with regard to a polymer having both: (i) a mean particle diameter of 0.04  $\mu\text{m}$  to 1  $\mu\text{m}$ ; and (ii) containing  $\leq 100$  ppm of coarse portions having a mean particle diameter of from 200 to 500  $\mu\text{m}$ .



In light of the amendments herein and the preceding comments, Applicants' claims are deemed to be unanticipated by, and unobvious and patentable over Gallagher and McClain. Reconsideration and withdrawal of these rejections is respectfully requested.

Claims 1-6, 8-13 and 17-19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 3,509,238 (**Aubrey t al**). This rejection

is respectfully traversed in light of the amendments herein and the following remarks.

Aubrey et al disclose a polyblend containing, (i) a matrix interpolymer of a monovinylidene aromatic hydrocarbon and an ethylenically unsaturated nitrile, and (ii) two different graft copolymers having superstrates of an interpolymer of a monovinylidene aromatic hydrocarbon and an ethylenically unsaturated nitrile (abstract). The graft copolymers Aubrey et al are disclosed as having a particle size of 0.03 to 0.6 microns (column 2, lines 23-25). The particle size of the graft particles of Aubrey et al are disclosed as being controlled by known techniques, which include seeding, emulsifying agent concentration, agitation, and rubber (i.e., the graft base) size variation by means of agglomeration prior to grafting (column 6, lines 38-44).

On pages 5 and 6 of the Office Action it is argued that it would have been obvious to use the graft particle size control techniques disclosed by Aubrey et al to prepare polymers having the claimed particle size range of Applicants' present claims. Applicants counter that Aubrey et al's disclosure of such particle size control techniques alone hardly provides the requisite motivation that would lead a skilled artisan to arrive at the particle size ranges of Applicants' present claims. Aubrey et al provide no disclosure or suggestion as to selectively limiting the coarse portions of their powders, they simply disclose a particle size range alone. In particular, Aubrey et al provide no disclosure, teaching or suggestion which would lead to the polymers of Applicants' present claims, which have both: (i) a mean particle diameter of 0.04  $\mu\text{m}$  to 1  $\mu\text{m}$ ; and (ii) contain  $\leq 100$  ppm of coarse portions having a mean particle diameter of from 200 to 500  $\mu\text{m}$ .



The criticality of the polymers of Applicants' claims containing  $\leq 100$  ppm of coarse portions having a mean particle diameter of from 200 to 500  $\mu\text{m}$  is demonstrated by the examples in the specification. In the examples, the comparative graft copolymers have a coarse portion of 200 to 500  $\mu\text{m}$  of 3800 and 4100 ppm. The example graft copolymers according to Applicants' present invention have a coarse portion of 200 to 500  $\mu\text{m}$  of less than 50 ppm. The graft copolymers according to Applicants' invention and thermoplastic compositions containing them

have improved physical properties (e.g., notched bar impact and elongation at tear) relative to the comparative examples.


In light of the amendments herein and the preceding comments, Applicants' claims are deemed to be unobvious and patentable over Aubrey et al.

Reconsideration and withdrawal of this rejection is respectfully requested.

In light of the preceding amendments and remarks, Applicants' presently pending claims are deemed to meet all the requirements of 35 U.S.C. §112, and to define an invention that is unanticipated, unobvious and hence, patentable.

Reconsideration of the rejections and allowance of all of the presently pending claims is respectfully requested.

Respectfully submitted,

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## **VERSIONS WITH MARKINGS TO SHOW CHANGES MADE**

### **IN THE SPECIFICATION:** (Marked-Up)

The following has been inserted between lines 1 and 3 on page 1 of the specification.

#### **FIELD OF THE INVENTION**

The following has been inserted between lines 5 and 7 on page 1 of the specification.

#### **BACKGROUND OF THE INVENTION**

The following has been inserted between lines 25 and 27 on page 1 of the specification.

#### **SUMMARY OF THE INVENTION**

The following has been inserted between lines 10 and 12 on page 2 of the specification.

#### **DETAILED DESCRIPTION OF THE INVENTION**

Line 1 on page 37 of the specification has been amended as follows.

[Patent claims] **WHAT IS CLAIMED IS:**

### **IN THE CLAIMS:** (Marked-Up)

The following are versions of the amended claims with markings to show changes made thereto in the present Amendment.

1. (Once Amended, Marked-Up) A [Homo- and/or co-]polymer[s of one or more] prepared from at least one ethylenically unsaturated monomer[s] selected [from at least one] from the group consisting of [the] mono- or poly-unsaturated olefins, vinyl acetate, styrene,  $\alpha$ -methylstyrene, styrenes substituted at the nucleus,

vinyl cyanides, maleic anhydride, N-substituted maleimides, chloroprene, C<sub>1</sub>-C<sub>8</sub>-alkyl acrylates and C<sub>1</sub>-C<sub>8</sub>-alkyl methacrylates, [which]

wherein said polymer is selected from at least one of homopolymers and copolymers, has a mean particle diameter of 0.04  $\mu$ m to 1  $\mu$ m, and contains [less than]  $\leq$  100 ppm of coarse portions having a mean particle diameter of from 200 to 500  $\mu$ m.

2. (Once Amended, Marked-Up) The [Homo- and/or co-]polymer[s according to claim] of Claim 1[, characterised in that they] wherein said polymer contains  $\leq$  50 ppm of coarse portions having a mean particle diameter of from 200 to 500  $\mu$ m.

3. (Twice Amended, Marked-Up) The [Homo- and/or co-]polymer[s according to] of Claim 1[, characterised in that they] wherein said polymer contains  $\leq$  1000 ppm of coarse portions having a mean particle diameter of from 100 to 200  $\mu$ m.

4. (Twice Amended, Marked-Up) The [Homo- and/or co-]polymer[s according to] of Claim 1[, characterised in that they] wherein said polymer contains  $\leq$  500 ppm of coarse portions having a mean particle diameter of from 100 to 200  $\mu$ m.

5. (Twice Amended, Marked-Up) The [Homo- and/or co-]polymer[s according to] of Claim 1[, characterised in that they] wherein said polymer contains  $\leq$  10,000 ppm of coarse portions having a mean particle diameter of from 50 to 100  $\mu$ m.

6. (Twice Amended, Marked-Up) The [Homo- and/or co-]polymer[s according to] of Claim 1[, characterised in that they] wherein said polymer contains  $\leq$  5000 ppm of coarse portions having a mean particle diameter of from 50 to 100  $\mu$ m.

8. - 13. (Cancelled)

17. (Once Amended, Marked-Up) A thermoplastic molding composition comprising the [homo- and/or co-]polymer of Claim 1.

20. (Added) The thermoplastic moulding composition of Claim 17 further comprising a graft polymer prepared from resin-forming vinyl monomers and a rubber substrate.

21. (Added) The thermoplastic moulding composition of Claim 17 wherein said moulding composition comprises at least one of thermoplastic polycarbonates and polyester carbonates.

22. (Added) The thermoplastic moulding composition of Claim 17 wherein said moulding composition comprises thermoplastic polyesters.

23. (Added) The thermoplastic moulding composition of Claim 17 further comprising at least one flameproofing agent.

24. (Added) The thermoplastic moulding composition of Claim 17 further comprising at least one inorganic compound.

25. (Added) The thermoplastic moulding composition of Claim 17 wherein said moulding composition comprises thermoplastic polyolefins.

26. (Added) The thermoplastic moulding composition of Claim 17 wherein said moulding composition comprises thermoplastic fluorinated polyolefins.